REMARKS

This amendment is submitted in an earnest effort to bring this case to issue without delay.

Applicant wishes to reiterate his claim to the benefit of his German priority date of 11 September 1998 pursuant to the International Convention. A certified copy of German Patent Application 198 41 586.9 filed 11 September 1998 has already been made of record as part of Applicant's PCT/ EP 99/06584 filed 7 September 1999 of which the instant application is the U.S. National Phase. The Examiner has already acknowledged Applicant's perfected right of priority.

Applicant has canceled original claims 1 through 6 and is submitting new claims 7 through 12. Antecedent basis for the new claims may be found in the specification on pages 2 through 4 and in Figures 1 through 3. Thus claims 7 through 12 are now in this application and are presented for examination.

No claim now presented is a multiply dependent claim. Thus the objection set forth in the office action to original claim 6 is not relevant to any of the claims now presented.

The Examiner has rejected claim 1 as anticipated under 35 USC 102 citing PRIESTLEY (A). Applicant believes that no such rejection should be maintained against any of claims 7 through 12 now in the application. The PRIESTLEY et al reactor and process are entirely different from those of the presently claimed

invention. PRIESTLEY discloses a fluidized bed (see elements 53 and 54 inside the reactor 10). The purpose of the PRIESTLEY process is to destroy organic waste materials, for example sewage sludge (col. 2, line 67), by burning the organics essentially completely (complete combustion and destruction of odorous constituents is mentioned in col. 4, lines 5 and 6 of the reference) with fuel (31) wherein a substantial amount of bed fines (sand particles, col. 3, lines 36 and 37) and ash are elutriated (39, 41) with the exhaust gases. The solids are separated from the exhaust gases and returned directly to the fluidized bed (43,44).

PRIESTLEY does not describe the composition of his exhaust gases, but it is well known that the main components of exhaust gases from burning organics are HCl, $(NO)_x$, SO_2, CO, HF, PCDD, and PCDF.

The presently claimed reactor in new claims 7 through 11 and operated according to the method of claim 12 relates to a fixed bed reactor for gasifying granular fuels (granular fuels include all kinds of coal according to page 1, paragraph 3). In the lower portion of the fixed bed formed by the granular fuels, an oxygen-containing gasification medium is introduced into the reactor and a product gas containing hydrogen and carbon oxides is produced. The product gas contains dust-like ash particles which are separated by at least one centrifugal separator. The remaining ash is withdrawn downwards through an opening (7) at the bottom of the reactor.

PRIESTLEY discloses a fluidized bed reactor for burning organic waste material requiring addition of a fuel furnished to

the fluidized bed by fuel guns (31) penetrating the vessel wall. The exhaust gas contains the abovementioned components as products of combustion such as sulfur dioxide and nitrogen oxides whereas the presently claimed reactor is not used for a combustion process to produce an exhaust gas, but through an endothermic reaction produces a synthesis gas containing carbon monoxide and hydrogen which is itself highly combustible.

Another difference between the PRIESTLEY reactor and the presently claimed reactor is that the centrifugal separators 39 and 41 of PRIESTLEY are located entirely above and outside of the fluidized bed whereas Applicant's cyclone separators are at least partially surrounded in the fluidized bed. See present claim 7 and Figures 1 through 3.

Thus the PRIESTLEY reactor differs from the presently claimed reactor in terms of structure as PRIESTLEY discloses a fluidized bed reactor with centrifugal separators outside the bed and the present invention in claims 7 through 11 is directed to a fixed bed reactor with centrifugal separators at least partially surrounded by the fluidized bed. Furthermore the PRIESTLEY reactor is operated to carry out combustion of organic waste material whereas the present invention includes operating the fixed bed reactor of claims 7 through 11 to produce a synthesis gas according to method claim 12. In view of the above the PRIESTLEY reference provides no basis to reject any claim now presented as anticipated under 35 USC 102 or as obvious under 35 USC 103.

The Examiner has rejected claim 1 originally presented as anticipated under 35 USC 102 in view of MAYERS (B). Applicant believes that no such rejection should be maintained against any claim now presented. MAYERS discloses a reactor for completely burning granular fuels in a fluidized bed of finely divided solid material for producing a hot high pressure gas stream suitable for use as the work medium for a gas turbine. See col. 1, lines 15 to 20. Initially the material making up the bed may be ash from the fuel to be burned or a relatively inert material such as alumina or silica. The inert material is of a particle size to permit fluidization of the bed under the influence of an upwardly rising gas stream; see col. 1, line 68 to col. 2, line 12 of the reference. Finely divided carbonaceous fuel is introduced below the upper surface of the bed. The intense agitation of the particles forming the fluidized bed effects complete mixing of fuel and inert material, and the fuel is dispersed substantially uniformly throughout the bed and combusted. See col. 2, lines 27 to 41. The compressed fluidizing air stream flows upwardly into the combustor and through the bed; see col. 2, lines 19 through 22. Since combustion occurs in the bed containing a major portion of inert particles, the bed provides an effective ash filter, and the hot gas collecting near the discharge of the combustor contains substantially less entrained ash than gas produced by direct burning of pulverized fuel in a high velocity air stream. See col. 2, line 72 to col. 3, line 5 of the reference. The hot gases rising from the fluidized bed will entrain some dust, which may be

separated by means of one or more cyclone separators positioned in the upper portion of the combustor. By the combustion of the solid fuel in the fluidized bed, the temperature of the air is raised. The heated gases consist of a major portion of air and a minor portion of combustion gas. See col. 5, lines 10 to 14 of MAYERS.

The presently claimed reactor and method of operating the reactor relate to gasifying granular fuels forming a fixed bed in which a mixture of oxygen and steam is introduced to effect a partial oxidation as required in endothermal gasification reactions for the production of hydrogen and carbon oxides, well known as syn gas. In accordance with MAYERS the product gas will be purified to remove entrained dust by means of one or more cyclone separators positioned in the upper portion of the gasifying reactor.

The reactor in MAYERS, like the reactor in PRIESTLEY, is a fluidized bed reactor as opposed to Applicant's fixed bed reactor. Furthermore the cyclone separators (16) in the MAYERS reactor are located entirely above the fluidized bed (11) and are not at least partially surrounded by the fixed bed as in the presently claimed invention. Thus the MAYER reactor differs structurally from the presently claimed reactor for the same reasons that the PRIESTLEY reactor differs from the present reactor. It is also clear from col. 4, lines 59 and 60 of MAYERS that the process disclosed therein is not a partial oxidation to produce synthesis gas. Instead the MAYERS process employs air in an amount in excess of that required to combust all of the solid carbonaceous fuel in the fluidized bed.

In view of the above, Applicant maintains that the MAYERS reference provides no basis to reject any claim now presented as either anticipated under 35 USC 102 or as obvious under 35 USC 103.

Lastly the Examiner has rejected claims 2 through 5 originally presented as obvious under 35 USC 103 citing the combination of MAYERS and ANGELL. The Examiner has applied ANGELL because this reference discloses a reactor containing both an annular chamber (4) and cyclone separators (22) which are disposed outside the portion of the annular chamber. The cyclone separators contain inlet lines (23) that communicate with the catalyst bed and outlet lines (24) that lead to an outlet compartment or header circumventing the top of the annular chamber through which the product is removed from the reactor through a line (26). The Examiner considers this structure to be analogous with that of the present invention as shown in Applicant's Figures 1 and 2 and as claimed in claims 2 through 4. However, as in the case with PRIESTLEY and MAYERS, the cyclone separators (22) in ANGELL are located entirely outside of the catalyst bed. See the figure of ANGELL where the separators are located completely above the lower catalyst bed (7) in the reaction zone (5) and entirely below the upper catalyst bed (11) in the regenerating zone (6). Once again the presently claimed invention requires that the cyclone separators be at least partially surrounded by the fixed bed of granular fuel. Furthermore according to col. 2, line 9 of ANGELL the lower catalyst bed in the reaction zone is maintained in a fluid-like condition unlike the fixed bed of granular fuel of the

presently claimed invention. Thus the structure of the ANGELL reactor is not at all like the structure of the reactor in the presently claimed invention.

Respectfully submitted,
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